

# **ROTATABLE CARRIER FOR OBJECTS OR DISPLAY**

## **BACKGROUND OF THE INVENTION**

### 1. Field of the Invention

The present invention relates to a rotatable carrier, and more  
5 particularly to a rotatable carrier for rotatably supporting objects or  
displays for allowing the objects or displays to be clearly seen from  
various directions or angles.

### 2. Description of the Prior Art

Typically, various objects, such as displays, monitors, screens,  
10 etc. are stably or solidly supported on tables, and may not be  
suitably rotated relative to the tables, such that the objects or the  
displays may not be clearly seen by users from various directions or  
angles.

For example, in stock markets, the displays, or monitors, or  
15 screens, etc. are stably or solidly supported on tables or in cabinets  
and thus may not be easily seen by people.

In meeting, several people may have to watch a display, or  
monitor, or screen. However, the display, or monitor, or screen is  
conventionally and stably supported on tables, and may not be  
20 suitably rotated and directed to various people.

The present invention has arisen to mitigate and/or obviate the  
afore-described disadvantages of the conventional carriers for  
displays, monitors, screens, etc.

## **SUMMARY OF THE INVENTION**

25 The primary objective of the present invention is to provide a  
rotatable carrier for rotatably supporting objects or displays or  
monitors or screens, and for allowing the objects or displays to be

clearly seen from various directions or angles.

In accordance with one aspect of the invention, there is provided a rotatable carrier comprising a casing, a detecting device attached to the casing, a housing rotatably supported on the casing,  
5 to support objects thereon, and a rotating device for rotating the housing relative to the casing, to rotate the objects toward selected directions. The housing includes an interacting member provided thereon and arranged to act on the detecting device, in order to control the rotating device, and to prevent the housing from being  
10 over rotated relative to the casing.

The rotating device includes an inner rack provided in the housing, and a gear rotatably received in the casing and engaged with the inner rack of the housing. The rotating device includes a motor coupled to the gear, to rotate the housing relative to the  
15 casing via an engagement of the gear with the inner rack of the housing. The rotating device includes a reduction gearing coupled between the gear and the motor. The casing includes a control circuit coupled between the motor and the detecting device.

The casing includes a plate secured thereon, and a plurality of  
20 balls disposed between the plate and the housing, to smoothly support the housing on the plate of the casing. The plate includes a track having a groove formed therein to receive the balls. The housing includes a track having a groove formed therein to receive the balls. A ring may further be provided and rotatably engaged  
25 onto the plate and includes a plurality of holes formed therein to receive the balls respectively, and to space the balls away from each other.

The housing includes a center cavity formed therein, the plate includes an axle extended therefrom and engaged into the center cavity of the housing, to rotatably attach the housing to the plate. The casing includes a peripheral flange extended radially and outwardly therefrom, and the housing includes a circular bar secured thereto and engaged with the peripheral flange of the casing, to rotatably attach the housing to the casing, and to prevent the housing from being disengaged from the casing.

The detecting device includes a signal emitting device, and a signal receiving device, and the interacting member of the housing is provided to act with the signal emitting device and the signal receiving device of the detecting device. The interacting member of the housing is arranged to be engaged between the signal emitting device and the signal receiving device of the detecting device, to selectively block signals emitted from the signal emitting device, and to prevent the signals from being emitted to the signal receiving device of the detecting device.

One or more switches may further be provided to control the rotating device, and/or a remote control device may further be provided to remote control the rotating device.

One or more further detecting devices may further be provided and attached to the casing, to act with the interacting member of the housing, and to control the rotating means, and to limit a rotational movement of the housing relative to the casing together with the detecting device, and to prevent the objects from being over rotated relative to the casing and the users.

Further objectives and advantages of the present invention will

become apparent from a careful reading of the detailed description provided hereinbelow, with appropriate reference to the accompanying drawings.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

5        FIG. 1 is a perspective view of a rotatable carrier in accordance with the present invention;

FIG. 2 is a partial exploded view of the rotatable carrier, as seen from top of the rotatable carrier;

FIG. 3 is another partial exploded view of the rotatable carrier,  
10    which has been disposed up side down;

FIG. 4 is a partial perspective view showing a portion of the rotatable carrier;

FIG. 5 is a plan schematic view of the rotatable carrier;

FIG. 6 is a partial perspective view showing a detecting device  
15    of the rotatable carrier;

FIG. 7 is a partial top plan schematic view of the rotatable carrier;

FIG. 8 is a partial top plan schematic view similar to FIG. 7, illustrating the operation of the rotatable carrier;

20        FIG. 9 is a partial plan schematic view showing another arrangement of the detecting device of the rotatable carrier;

FIGS. 10, 11 are partial top plan schematic views similar to FIGS. 7 and 8, illustrating the operation of the detecting device as shown in FIG. 9; and

25        FIG. 12 is an enlarged partial top plan schematic view illustrating the operation of the detecting device as shown in FIGS. 9-11.

## **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring to the drawings, and initially to FIGS. 1 and 2, a rotatable carrier in accordance with the present invention comprises a base 10 including a peripheral wall 11 extended therefrom to form or define a space 12 therein, and including a socket 13 attached thereto for coupling to electric power sources, and including a control device 14 attached thereto for controlling the rotatable carrier.

For example, the control device 14 of the rotatable carrier may include one or more signal receiver devices 15 directed toward various angles or directions, to suitably receive signals of remote control devices 17 from various angles or directions. The control device 14 may further include one or more switches 16 provided therein, for allowing the rotatable carrier to be controlled manually by the users.

As shown in FIGS. 4, 5, a casing 20 is received in the space 12 of the base 10, and secured to the base 10 with such as fasteners 21 (FIG. 5), and includes a peripheral flange 22 extended radially and outwardly therefrom, and includes one or more, such as two openings 23 formed in the outer peripheral portion thereof (FIG. 4).

A gear 24 is rotatably secured in the casing 20 with a pivot shaft 27, and is coupled to a motor 25 via such as a reduction gearing 26 which may also be rotatably secured in the casing 20 with one or more pivot shafts 27, and arranged to allow the gear 24 to be suitably rotated by the motor 25 in selected or reduced rotational speeds.

As shown in FIGS. 2, 3, 5, a plate 30 is secured on top of the

casing 20 with such as fasteners 31, and includes one or more hubs 32 extended downwardly therefrom to rotatably and stably support the pivot shafts 27 between the casing 20 and the plate 30. The plate 30 includes a circular track 33 formed or provided thereon and  
5 having a circular groove 34 formed therein for slidably receiving balls 35 therein.

A ring 36 may be rotatably engaged onto the circular track 33 of the plate 30, and may include a number of holes 37 formed therein to receive the balls 35 respectively, and to suitably space the  
10 balls 35 away from each other, and thus to allow the balls 35 to be smoothly received and slid along the circular groove 34 of the circular track 33. The plate 30 includes an axle 39 extended upwardly therefrom, such as extended in the center thereof.

A cover or housing 40 is engaged onto the plate 30 and the ring  
15 36, and includes a circular bar 41 secured to the lower peripheral portion thereof with such as fasteners 42 (FIG. 5), and engaged with the peripheral flange 22 of the casing 20, to rotatably secure or attach the housing 40 to the casing 20, and to prevent the housing 40 from being disengaged or separated from the casing 20.

20 The housing 40 includes a cavity 43 formed therein, such as extended in the center thereof, to rotatably receive the axle 39 of the plate 30, and to allow the housing 40 to be smoothly rotated relative to the plate 30. The housing 40 may further include a circular track 44 formed or provided thereon (FIG. 3) and having a circular groove  
25 45 formed therein for slidably receiving the balls 35 therein, and thus for further smoothly support the housing 40 on top of the plate 30.

The housing 40 further includes an inner and circular rack 46 formed or provided therein (FIG. 3), for engaging with the gear 24 and for allowing the housing 40 to be rotated or driven by the motor 25. The housing 40 may be used to support various objects 80 thereon (FIG. 1), such as screens or displays or monitors or the like thereon, and thus to allow the objects 80 to be rotated in concert with the housing 40 toward selected angles or directions.

As shown in FIGS. 4 and 6-8, the rotatable carrier further includes one or more, such as two detecting devices 50 received in such as the casing 20, and disposed in the openings 23 of the casing 20 respectively (FIG. 4). Each of the detecting devices 50 includes a light or signal emitting device 51, and a light or signal receiving device 52 facing toward the light or signal emitting device 51, and arranged to receive the light or signal 53 emitted from the light or signal emitting device 51 (FIG. 6).

For example, when the detecting devices 50 are energized, and the light or signal emitting device 51 may emit lights or signals 53 toward the light or signal receiving device 52, in order to control the motor 25. The detecting devices 50 may be coupled to the motor 25 via a circuit board or a control circuit 54 (FIG. 4), in order to control or to switch on and off the motor 25.

The housing 40 may include a projection 47 extended therein (FIGS. 3, 5, 7, 8), and arranged to be engaged into the detecting devices 50, or to be engaged between the light or signal emitting device 51 and the light or signal receiving device 52 (FIG. 8), in order to block and to prevent the lights or signals 53 from being emitted into the light or signal receiving device 52, so as to control

or to switch off the motor 25.

Accordingly, the projection 47 of the housing 40 may be selectively engaged into either of the detecting devices 50, to switch off the motor 25, and thus to control or to determine the movement  
5 of the housing 40 relative to the casing 20, and to prevent the housing 40 from being over-rotated relative to the casing 20, and thus to allow the objects 80 to be rotated toward selected or suitable angles or directions.

Alternatively, as shown in FIGS. 9-12, the light or signal  
10 emitting device 51 and the light or signal receiving device 52 of the detecting devices 50 may be disposed or arranged side by side, and the housing 40 may include a mirror or a reflective member 48 attached thereto, to selectively reflect the light or signal 53 emitted from the light or signal emitting device 51 toward the light or signal  
15 receiving device 52 (FIG. 12), and so as to control or to switch on and off the motor 25.

In operation, as shown in FIG. 1, the signal receiver devices 15 of the control device 14 may be used to receive signals from the remote control devices 17, to control or to actuate the motor 25 to  
20 drive or to rotate the housing 40 relative to the casing 20 toward any selected or suitable angles or directions, to allow the objects or the displays 80 to be easily and clearly seen by the users from various directions or angles.

The motor 25 may also be controlled or actuated by the  
25 switches 16, to drive or to rotate the housing 40 relative to the casing 20 toward any selected or suitable angles or directions. When the interacting means or device (47, 48), such as the projection 47



or the mirror or reflective member 48 of the housing 40 actuates or acts onto either of the detecting devices 50 by such as blocking or reflecting the light or signal 53 emitted from the light or signal emitting device 51, the detecting devices 50 may control or switch  
5 off the motor 25, to prevent the housing 40 and the objects 80 from being over-rotated relative to the casing 20.

Accordingly, the rotatable carrier in accordance with the present invention may be provided for rotatably supporting objects or displays or monitors or screens, and for allowing the objects or  
10 displays to be clearly seen from various directions or angles.

Although this invention has been described with a certain degree of particularity, it is to be understood that the present disclosure has been made by way of example only and that numerous changes in the detailed construction and the combination  
15 and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.